

**VERMONT ENVIRONMENTAL BOARD**  
**10 V.S.A. Ch. 151**

Re: *George Huntington*

Land Use Permit #3R0279-1 (Altered)-EB

**Findings of Fact, Conclusions of Law, and Order**

This matter involves an appeal by the Vermont Agency of Natural Resources (ANR) to the Environmental Board (Board) from Land Use Permit #3R0279-1[Altered] (Permit) and accompanying Findings of Fact, Conclusions of Law, and Order (Decision) issued by the District 3 Environmental Commission (Commission) to George Huntington (Huntington). The Permit authorizes the previous change of an approved 48-inch culvert to a 48-inch culvert with a 30-inch auxiliary culvert (Project). The previously approved project is an eight-lot subdivision located on Goshen Road in Bradford, Vermont.

**I. History**

On March 11, 2004, the Commission issued Land Use Permit #3R0279-1 and accompanying Findings of Fact, Conclusions of Law, and Order to Huntington.

On May 17, 2004, in response to a March 26, 2004 Motion to Alter filed by ANR, the Commission issued the Permit and Decision to Huntington. The Commission also issued a Memorandum of Decision on May 17, 2004.

On June 16, 2004, ANR filed an appeal with the Board from the Permit and Decision, alleging error with respect to 10 V.S.A. §§6086(a)(1)(E), (4), (7), and (9)(K).

On July 22, 2004, Board Chair Patricia Moulton Powden convened a Prehearing Conference with the following participants:

George Huntington  
ANR by Elizabeth Lord, Esq.

On July 27, 2004, the Chair issued a Prehearing Conference Report and Order.

On September 29, 2004, the Board held a hearing in this matter, with George Huntington, the Town of Bradford, Two Rivers Ottauquechee Regional Commission (TRORC), and ANR participating.

The Board deliberated on October 6, 13 and 27, 2004. The matter is now ready for decision.

## II. Issues

As defined by the Prehearing Order, the issues in this matter are:

1. Whether the Project satisfies 10 V.S.A. §6086(a)(1)(E).
2. Whether the Project satisfies 10 V.S.A. §6086(a)(4).
3. Whether the Project satisfies 10 V.S.A. §6086(a)(9)(K), specifically, the public lands which ANR has identified as:
  - a. Goshen Road and the two town-owned culverts associated with it;
  - b. the state-owned culvert under Interstate 91;
  - c. the Low Forest Rec Trail and its associated culvert; and
  - d. the access road to the Huntington subdivision (assuming that it is taken over by the municipality in the future)

## III. Findings of Fact

To the extent any proposed findings of fact and conclusions of law are included below, they are granted; otherwise, they are denied. See, *Secretary, Agency of Natural Resources v. Upper Valley Regional Landfill Corporation*, 167 Vt. 228, 241-42 (1997).

### *Prior permits*

1. On November 13, 1978, the District 3 Environmental Commission issued Land Use Permit 3R0279 and accompanying Findings of Fact, Conclusions of Law, and Order to George Huntington authorizing an 11-lot subdivision off Goshen Road in Bradford.
2. Condition 6 of Land Use Permit 3R0279 requires: "A 48" culvert will be installed for the road crossing of the small brook on Lots 1 and 8."
3. Condition 7 of Land Use Permit 3R0279 requires: "A 15 foot buffer will be left in an undisturbed natural condition on both sides of this brook on Lots 1, 8 and 9."
4. Condition 10 of Land Use Permit 3R0279 requires: "During installation of the culvert, disturbance of the streambed shall be kept to a minimum and that culvert shall be installed with both inlet and outlet at streambed level."
5. Huntington filed an application for an amendment permit to allow the new culverts on October 16, 2003.
6. On March 11, 2004, the Commission issued Land Use Permit 3R0279-1, authorizing the as-built culverts. Following a motion to reconsider filed by ANR, the Commission issued a modified permit and decision on May 17, 2004.

*Access to the subdivision and the culverts*

*The road*

7. Access to the subdivision from Goshen Road is over private road which crosses an unnamed brook; this road is the only vehicular access to the subdivision.
8. Huntington started road construction in the subdivision, as far as the stream bed, during the period 1979 and 1985.
9. Road construction involved moving earth, rock, gravel and road fill to create approximately 100 linear feet of elevated road at right angles to the stream valley. The road fill approaches to the culvert crossing are about equal length on either side of the stream.
10. The road crosses a shallow gully between Goshen Road and the subdivision.
11. Unlike a dam specifically designed to act as an overflow spillway, the road is not presently constructed in a manner that would allow it to maintain stability during an extended period of major overflow.
12. Using a road crossing as a means of slowing a flooding stream is not a recommended flood control practice.
13. If there is blockage of the culverts during a storm event, there is the possibility that the water will overtop the roadway. If mitigating steps are not taken, there is the possibility that water spilling over the downstream roadway embankment will cause the road to erode.
14. To reduce the potential for washout should the culverts become blocked in flood situations, the road should be paved, designed to allow water to sheet over it; and reinforced on its upstream and downstream sides with rip-rap.
15. To relieve pressure on the road during high flood events, the swale to the subdivision side of the stream crossing should be regraded to act as a shallow channel to divert water from the road and culverts.

*Culverts*

16. Huntington installed a 48" culvert (with no concrete headwalls) in the unnamed stream in 2000, and began to complete road construction.

17. Some time in 2001 or 2002, major erosion around the 48" culvert occurred.
18. In 2003, Huntington installed a stream crossing consisting of two new culverts.
19. The 2003 stream crossing consists of earth fill over two corrugated, galvanized steel culverts placed side-by-side. The two Project culverts are a 48" (diameter) culvert and a 30" (diameter) culvert.
20. Both culverts are treated with a concrete headwall at their inlet and outlet ends.
21. The outlet elevations of both culverts are elevated above streambed level. Such elevations may cause outlet scour due to the plunging of water from the outlet which could ultimately undermine the outlet headwall.
22. Scour development at the stream-crossing outlet also jeopardizes the integrity of the riparian vegetation by inducing undermining of the banks, erosion, and discharge of earth materials to the channel. Some evidence of undermining exists on the Goshen Road side of the streambank at the outlet of the Project culverts.
23. Culverts, including the ones at the Project site, can become blocked with ice, debris, and sediment. Blockage of the Project culverts could cause water to build up behind the road. Such a buildup could cause the road and culverts to fail, releasing a pulse of water downstream.
24. The culverts, if not blocked by ice, debris or sediment, meet accepted hydraulic standards and are hydraulically adequate to handle expected water flows.
25. The culvert which runs under Interstate 91, downstream of the Project site, is protected by a trash rack, a device which captures debris carried by the stream before it can reach the culvert and cause it to be blocked.
26. Trash racks can be effective methods to prevent the blockage of culverts by debris, but they must be designed properly, maintained and cleared of any material that might cause blockage of the culvert.
27. In order to address potential blockage, to allow the stream to run a more natural course, and reduce the need for culvert maintenance, ANR prefers that the Project culverts be replaced by a bridge structure with shallow, pre-cast block abutments, steel beam superstructure and timber or concrete deck.

*Past flood events*

28. Severe floods in 1998 caused the unnamed stream to flood and culverts on the stream to fail.

29. Goshen Road is a steep road with a gradient of approximately 14%.

30. In the 1998 flood, severe damage was caused to Goshen Road and homes on Goshen Road downstream of the Project site when culverts failed to adequately handle increased water flows.

*Criterion 1(E) Streams*

31. There is a slope gradient of approximately 4% at the stream where the access road crosses the culverts.

32. Because of the potential for blockage of the Project culverts by ice, debris, and sediment, there may be the need to perform in-channel maintenance activities including repair of the stream crossing structure and clearance of sediment and debris from the channel.

33. The segment of the stream channel and buffer located immediately upstream of the Project culverts differs from the segments downstream and further upstream of the culvert. There are no trees or other significant vegetation immediately above the culvert. Immediately above the culvert, the stream channel is wider and the banks slope significantly more gently than the segments downstream and further upstream of the culvert.

34. Huntington has performed in-stream channel activities in the vicinity of the culverts; these activities have included removal of willow trees and shrubby vegetation and other disturbance in the 15 foot vegetated riparian buffer which is a required buffer in the Commission's November 13, 1978 Act 250 Permit.

35. In the past, channel excavation activities have been conducted with a backhoe operating from on top of the stream bank; these activities have degraded the quality and stabilizing influence of the riparian vegetation.

*Criterion 4 Soil Erosion*

*The stream and its watershed*

36. This stream crossing structure is located downstream of a hydrologically dynamic watershed.

37. Although on a somewhat steep gradient, the watershed land cover both upstream and downstream from the proposed development consists of a relatively mature mixed deciduous and coniferous forest, with an understory of shrubby vegetation, forest debris and good ground cover. No development is proposed for either of these large, forested parcels of land either upstream or downstream of the project.

*Criterion 9(K)*

38. The proposed building sites in the subdivision are located about 20+ feet higher in elevation above the stream swale.

39. Failure of the culverts and road will isolate the Huntington subdivision residences from emergency vehicles, and will endanger any person attempting to cross the stream during or after high flows.

40. At full flood stage, this stream would pose a safety hazard, and it is unrealistic and dangerous to expect persons to traverse floodwaters to reach safety under such circumstances.

41. If the Project stream crossing is taken over by the municipality in the future, it will be a public investment.

42. If the Project culverts and roadway were to fail publicly owned downstream structures and roads could be endangered. These include the Low Forest public recreation trail and stream crossing with associated culvert, the 1-91 culvert crossing, the Goshen Road Town Highway stream crossings with two associated culverts, and other town-owned stream crossing structures.

#### **IV. Conclusions of Law**

This case involves only the issue of whether the two culverts - a 48" culvert and a 30" auxiliary culvert - installed by George Huntington are adequate to handle the flow from the unnamed stream. The focus of this appeal is on three questions: whether the Project will maintain the natural condition of the stream (Criterion 1(E)); whether the Project will cause unreasonable erosion or a reduction in the capacity of the land to hold water thus leading to an unhealthy condition (Criterion 4); and whether the Project will endanger the public investment in lands (Criterion 9(K)) - notably the road leading into Huntington's subdivision (which crosses over the culverts) and other facilities and lands which are downstream from the culverts.

A. *The Criteria*

The criteria on appeal, Criteria 1(E), (4) and (9)(K), all address similar questions: Will the culverts constructed by Huntington adversely impact the stream or its adjacent lands, and will they have negative effects on downstream lands or facilities?

*Criterion 1(E) – Streams*

The Board will grant a permit whenever the applicant demonstrates "that, in addition to all other applicable criteria, the development or subdivision of lands on or adjacent to the banks of a stream will, whenever feasible, maintain the natural condition of the stream, and will not endanger the health, safety, or welfare of the public or of adjoining landowners." 10 V.S.A. §6086(a)(1)(E); *Re: Barre Granite Quarries, LLC and William and Margaret Dyott, #7C1079(Revised)-EB*, Findings of Fact, Conclusions of Law, and Order at 71 (Dec. 8, 2000). "Stream" is defined as "a current of water which is above an elevation of 1,500 feet above sea level or which flows at any time at a rate of less than 1.5 cubic feet per second." 10 V.S.A. §6001(18).

The burden of proof is on the applicant under Criterion 1(E). 10 V.S.A. § 6088(a). The applicant has the burden of proof to demonstrate that "all reasonable alternatives" which would allow the stream to remain in its natural condition have been considered. *Re Mark and Pauline Kiesel, 5W1270-EB*, Findings of Fact, Conclusions of Law and Order (Altered) at 33 (Aug. 7, 1998), *rev'd on other grounds, In re Kiesel, 172 Vt. 124 (2000)*, *citing Re: Okemo Mountain, Inc., #2S0351-12A-EB*, Findings of Fact, Conclusions of Law, and Order (Revised) at 14 (Jul. 23, 1992).

*Criterion 4 - Erosion*

Under Criterion 4, the Board will issue a permit if the Project "[w]ill not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result." 10 V.S.A. § 6086(a)(4). *Re: John J. Flynn Estate and Keystone Development Corp. #4C0790-2-EB*, Findings of Fact, Conclusions of Law, and Order at 19-20 (May 4, 2004).

The burden of proving compliance with Criterion 4 is on Huntington. 10 V.S.A. §6088(a); *In re Wildlife Wonderland, Inc., 133 Vt. 507, 511 (1975)*.

*Criterion 9(K) - public facilities and lands*

Criterion 9(K) states that

A permit will be granted for the development or subdivision of lands adjacent to governmental and public utility facilities, services, and lands, including, but not limited to, highways, airports, waste disposal facilities,

office and maintenance buildings, fire and police stations, universities, schools, hospitals, prisons, jails, electric generating and transmission facilities, oil and gas pipe lines, parks, hiking trails and forest and game lands, when it is demonstrated that, in addition to all other applicable criteria, the development or subdivision will not unnecessarily or unreasonably endanger the public or quasi-public investment in the facility, service, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to the facility, service, or lands."

10 V.S.A. §6086(a)(9)(K). *Flynn Estate, supra*, at 21. The burden of proof under Criterion 9(K) is on Huntington. 10 V.S.A. §6088(a).

The Board conducts two separate inquiries under Criterion 9(K) with respect to impacts on public facilities. First, the Board examines whether the proposed project will unnecessarily or unreasonably endanger the public investment in such facilities. Second, the Board examines whether a proposed project will materially jeopardize or interfere with (a) the function, efficiency, or safety of such facilities, or (b) the public's use or enjoyment of or access to such facilities. *Flynn Estate, supra*, at 21; *Re: Green Meadows Center, LLC, The Community Alliance and Southeastern Vermont Community Action, #2W0694-1-EB*, Findings of Fact, Conclusions of Law, and Order at 43 (Dec. 21, 2000); *Re: Munson Earth Moving Corp., #4C0986-EB*, Findings of Fact, Conclusions of Law, and Order at 11 (Apr. 4, 1997), *rev'd on other grounds, In re Munson Earth Moving Corp.*, No. 97-327 (Vt. Aug. 13, 1999); *Re: Swain Development Co., #3W0445-2-EB*, Findings of Fact, Conclusions of Law, and Order at 33 (Aug. 10, 1990).

#### B. Discussion

If the Project culverts at the Huntington subdivision are open and free of ice, debris, sediments or other matter that could cause blockage, they are hydraulically adequate to handle the expected flows from the watershed that feeds the unnamed stream that separates the subdivision from Goshen Road. The issue in this case, and the disagreement between the parties, concerns what will happen if the culverts are prevented from handling all of the water in the stream during flood events.

Huntington argues that his culverts can handle the water flow, and, if blockage occurred, it could be easily removed before any damage could result. What relatively small amount of water that might back up behind the access road would not cause either the road or the culverts to fail. Rather, he argues that road will serve as a dam spillway: the water will sheet across the top of the road and also through a shallow swale beside the road, with no adverse impacts on the road.

Conversely ANR contends using culverts within a road access that functions as dam spillway presents an unacceptable hazard to public safety, both in terms of risks to



the residents of the subdivision as well as to downstream users of public facilities. It argues that the road and culverts will be overwhelmed by water and fail, thus releasing a surge of water downstream and cutting off the residents of the Huntington subdivision from their access to Goshen Road. ANR therefore suggests that the Project culverts be removed and replaced by a bridge which will allow the stream to freely flow in a natural state.

The Commission found that the Project culverts, as designed, were not subject to failure and thus satisfied the criteria at issue in this appeal. Condition 10 of the Permit stated, however, "If the culvert washes out, for any reason, the permittee shall replace it with a bridge based on the design concepts and the recommendations contained in Exhibit 11."

Although the Board declines to go as far as urged by ANR and require the installation of a bridge over the unnamed stream to access the Huntington subdivision, it chooses to be more cautious than the Commission. While the culverts are adequate to handle expected flows, there is no provision in the Commission Permit to ensure that they will be maintained and free of ice or debris or other matter that might block the free run of water.

Trash racks can be effective methods to prevent the blockage of culverts by debris, but they must be maintained and cleared of any matter that might cause blockage of the culvert. The Board will therefore require the installation of at least one trash rack upstream of the Project culverts. The Board will also require that there be regular maintenance of the trash rack in order to ensure that they function as designed; debris, ice and sediment should also be removed from the culverts, as needed, in order to keep the culverts clear of matter that could cause blockage. In order to reduce impacts on the stream such maintenance on the trash rack(s) and culverts shall be done manually; under no circumstances should any equipment be used in the stream or in the 15' buffer on either side of the stream.

The Board agrees with ANR that it is poor policy to use roads as flood control dams. They are not designed to act as such. With the trash rack(s) and maintenance of the culverts in place, however, the Board believes that the Huntington access road will not need to function as a dam. Nonetheless, as a second safety precaution, the Board will require that Huntington take certain measures to ensure that, should the road ever be called upon to act as a dam, it be designed and constructed in a manner that will best address such a need.

The Board is not convinced that the present road into the Huntington subdivision will not be eroded and undermined during a storm event, should the culverts fail to adequately handle water flows from the unnamed stream. Various measures were suggested at the hearing that will allow the road to better function in potential flood situations. It should be paved, leveled to allow water to sheet over it, and reinforced on

its upstream and downstream sides with rip-rap. Further, alterations should be made to raise the streambed at the outfalls of the culverts in order to address scouring concerns. In addition, using the swale to the subdivision side of the stream crossing as an alternative spillway should be explored.

The Board also noted the existence of guardrail posts along the subdivision road as it crosses the stream. The Board believes that rails should be constructed on these posts as a safety precaution.

We leave it to the Commission's discretion to determine the number, placement and design of the trash rack(s) which are necessary to adequately prevent blockage of the culvert. Also, the scope and extent of the required rip-rap, the alterations to the outfall, the paving of the road, the type and number of the guardrails, and the use of the swale are left to the Commission's judgment.

Lastly, none of the measures noted above will work to protect the inhabitants of the Huntington subdivision unless they are implemented before the homes at the subdivision are occupied. The Board will therefore require that the improvements set forth in this decision occur on or before (a) the occupancy of the first home at the subdivision, or (b) June 15, 2005, whichever first occurs.

If the measures discussed herein are put in place,<sup>1</sup> the Board concludes that the Project will satisfy Criteria 1(E), 4 and 9(K). The stream will be kept, as feasible, in its natural condition,<sup>2</sup> unreasonable soil erosion will not occur, and the public investments

---

<sup>1</sup> Permit conditions alleviate adverse effects that would otherwise be caused by a project, and those adverse effects would require a conclusion that a project does not comply with the criteria at issue unless the conditions are followed. *In re Alpen Associates*, 147 Vt. 647 (1986); *Re: Ingleside Equity Group & Grice Brook Development Corp.*; *Re: St. Albans Cooperative & Maplefields*, #6F0391-7-EB, Findings of Fact, Conclusions of Law, and Order at 2 (Jan. 23, 2004); *Re: Hannaford Brothers Co. and Southland Enterprises, Inc.*, #4C0238-5-EB, Findings of Fact, Conclusions of Law, and Order at 23 (Apr. 9, 2002).

<sup>2</sup> ANR states that "the Board should not lose sight of the fact that the use of the culvert and the use of the project fails to maintain the natural condition of the stream as required under Criterion(1)(E)." The Board understands that the culverts have a greater impact on the stream than would ANR's suggested bridge. But the Board also recognizes that impacts to the stream have already occurred, and, indeed, occurred with the construction of the original culvert in 2000, a culvert, along with an access road, that was expressly authorized by the original permit issued by the Commission on November 13, 1978, Land Use Permit #3R0279. The only further disturbances to the natural flow of the stream would occur with respect to the installation of the trash racks and the ongoing maintenance of the culverts and trash racks.

at the subdivision and downstream of the Project culverts will not be unreasonably endangered or jeopardized.

**V. Order**

1. This matter is remanded to the District 3 Environmental Commission for further proceedings consistent with this decision.
2. Huntington shall prepare and present plans to the Commission to implement the improvements required herein.
3. All conditions in the Commission Permit shall remain in full force and effect.

Dated at Montpelier, Vermont this 16<sup>th</sup> day of November 2004.

ENVIRONMENTAL BOARD



Patricia Moulton Powden, Chair

\* George Holland

Samuel Lloyd

\* Patricia A. Nowak

Alice Olenick

Karen Paul

Richard C. Pembroke, Sr.

Jean Richardson

\* Christopher D. Roy

\* Board Members Holland, Nowak and Roy, dissenting in part: While we agree with the Board's conclusions and order, we dissent from any finding of fact that states or implies that the Huntington culverts endanger the subdivision or any downstream culverts. We cannot agree that any credible evidence that such a threat exists was presented.